

## Patent claims

1. Method for generation of a homogeneous magnetization in a spatial examination volume of a magnetic resonance system in the framework of a subject examination; which magnetic resonance system comprises a body coil comprising a plurality of resonator segments and a control and evaluation device for separate activation, corresponding to a set of predetermined, segment-specific excitation parameters, of the individual resonator segments electromagnetically decoupled from one another; characterized in that the resonator segments are excited in temporal sequence within an excitation sequence using different excitation parameter sets with phase distributions of the nuclear magnetization distributions in the examination volume, which nuclear magnetization distributions constructively overlap into a resulting homogeneous total nuclear magnetization distribution in the examination volume; whereby such a frequent change and such a number of different parameter sets are used that the local power losses introduced into the examination volume as a consequence of the excitation with the parameter sets are differently situated locally, such that they do not coincide and do not mutually reinforce during an entire excitation cycle.
2. Method according to claim 1, characterized in that the excitation parameter sets to be used are selected dependent on the homogeneity of the set-specific magnetic field.
3. Method according to claim 1 or 2, characterized in that the examination volume is sub-divided into a plurality of sub-volumes, whereby for each sub-volume a plurality of different excitation parameter sets to be used for sequential activation of the resonator segments are used.
4. Method according to claim 3, characterized in that the excitation parameter sets to be used are selected such that the flip angle amplitudes in the respectively sub-region are optimally large and/or the flip angle amplitude distributions in the

respective sub-region are homogeneous, and whose flip angle phase distributions in the entire examination volume allow the constructive superimposition.

5. Method according to claim 4, characterized in that the amplitude of an  
5 excitation parameter set and/or the excitation duration to be used are determined using an excitation set and the phase shift of an excitation parameter set to be used, such that an at least largely homogeneous flip angle amplitude distribution results in the entire examination volume.
- 10 6. Magnetic resonance examination system with a control and evaluation device fashioned for implementation of a method according to any of the claims 1 through 5.